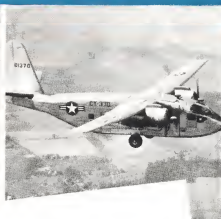


AVIATION WEEK

OCT. 22, 1951

50 CENTS

A MCGRAW-HILL PUBLICATION



Their measure of fuel is minutes!

When unforeseen weather or other flight conditions keep a plane in the air longer than planned, its fuel gauge becomes a mighty important instrument. Fuel gauges that read either "too much" or "not enough" become extra weight—dangerous weight. But a fuel gauge that's really dependable can be counted on to help insure the safe arrival of crew, passengers and cargo.

That's why the aircraft types shown here—plus 24 others—are now equipped with individual adaptations of the Honeywell Electronic Fuel Gauge. Reading this

wonderfully precise instrument, the pilot or flight engineer can accurately determine down to a very few minutes how much "flying time" is left in the tanks. You see, it measures by weight rather than by volume, is unaffected by the attitude, altitude or motion of the plane.

This is only one of many Honeywell products now in use by the aviation industry. We expect the list to grow longer in future years. Because automatic controls are so important to aviation progress. And Honeywell has been the leader in controls for more than 60 years.

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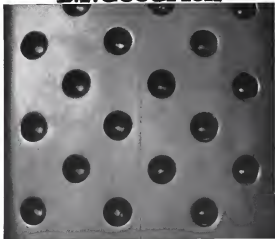


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every fighter, every bomber,
every transport,
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Hydro-Aire Inc.,
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B.F. Goodrich



New kind of fire outwears all others in airline tests

AIRLINES who have used a new B. F. Goodrich sole in actual service have now reported 11 outwears all other soles they have used.

It has a new kind of tread design with round, dimple-like indentations in the rubber. The dimple pattern alone provides better dissipation of the air load and reduces exposure to tread cutting. The tread design is a complete departure from conventional ribbed treads.

A typical report from an airline using DC-3 equipment: "We measured

the soles after 400 hours, 1200 landings. In the process of measuring, we discovered that there was enough rubber left for about 100 hours more at most at 1500 landings. These tests have given us longer service than any we have had."

Some of the airlines that tested the new soles and are now using them in standard equipment are: United, Eastern, American, Continental, Panair, West Coast and National Airlines. They are beginning to make the switch.

Rolling up for production of the

new sole in four additional tests is now underway at B. F. Goodrich. The new, longer wearing B. F. Goodrich sole is the better first in aviation tests from B. F. Goodrich, leader in rubber research and engineering. The B. F. Goodrich Company, Akron, Ohio.

B.F. Goodrich
FIRST IN RUBBER

'Chuck' O'Connor says: "GIVE 'EM THE PERSONAL TOUCH"



O'CONNOR AIRCRAFT COMPANY, Albany (N.Y.) supports, services General Air Lines and offers maintenance and personnel from every factory for first, routine and as possible service. Head of the operation, Charles F. (Chuck) O'Connor (right), is widely known as "flying from all parts of the country. He has been in Europe since the "wood and wire" airplane days and is the oldest of the flying O'Connor family (five brothers and two sons). "Chuck" says: "I believe in personal service and when I sell something, it must be a product I believe in myself. That's why I've sold, recommended and sold Texaco for years."

...and sell 'em nothing but the best — TEXACO."

You can depend upon an experienced and successful airport operator like 'Chuck' O'Connor to give you the straight word on what builds business: complete facilities, trained service, and a reputation for handling nothing but topflight products like Texaco.

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TEXACO Lubricants and Fuels

FOR THE AVIATION INDUSTRY

TEXACO STAR TRAFFIC during AVIATION WEEK on Interstate every Tuesday night. See newspaper for time and station.

NEWS DIGEST

DOMESTIC

Continental Air Lines has ordered two 64-passenger Douglas DC-6Bs, to be used on the Atlanta-Houston-Los Angeles and Houston-San Francisco routes, where they will take part in the Continental American Airlines-Herz-West Coast interchange. The cost of the two planes with spares will be \$4 million. Delivery is set for May and June, 1955. Continental-MCA through-flight agreement has CAA approval for daily one-stage service, St. Louis to Denver-Colorado Springs via inter-changes at Kansas City.

First Silver Falcon, Eastern Air Lines' plane for the new Miami 60-64 two-engine transport, has been delivered to the carrier for personal training. Service of the craft will be delivered by Nov. 23 for training and state flying EAL experts to receive the first passengers for service Silver Falcon No. 29 (See picture on p. 5).

MATC C-97 Stratofreighters on route from The Annex in Winchester, AFD with 14 MATC aircraft showed were reported missing last week. Craft was believed to have run into violent air turbulence west of The Annex. Until now, no operational Stratofreighters had been lost.

LT. GEN. LAWRENCE S. KOTER has been nominated as USAF deputy chief of staff, personnel. Nominated to succeed Koter as MATC commander is Maj. GEN. JOSEPH BOWEN, who has been director of plans, USAF office of deputy chief of staff, operations.

Northwest Airlines plans to operate flights of a new piston Japanese airplane called Nissan Kikusui. Kikusui Operating out of Tokyo, the line will serve Sapporo, Asahikawa, Yokohama, Nagoya, Osaka, Hiroshima and Fukuoka, using two DC-4 and two 2-5's. The Japanese owners will operate sales, advertising, ticketing.

Wage talks between the Boeing Airplane Co. and the Aero Mechanics Union will be postponed Nov. 22 at Seattle upon request of the union. Boeing has promised to discuss a major wage increase but action is unlikely until May 23, in the present contract extends until then.

Five more airlines have signed pilot wage contracts including mileage compensation. They are Trans World, Chicago & Southern, Continental,

Rebecca and Western Central. Air Line Pilot Assn. President Cleveland Davis says the CAA's contract is "one of the best contracts we ever signed."

Pan American and TWA went with CAA they will, to discuss American position on trans-Atlantic air coach fares and routing changes at forthcoming International Air Transport Assn. meeting next month. PANAM uses it as a ready to hand the IATA fare agreement and go it alone on coach.

A consortium of ALFA funds has been approved by Federal Judge William J. LaFollette as a result of legal action between several ALFA President David Belachuk and the new officers, headed by Clarence Symes. Belachuk had asked an injunction restraining the new officers from having authority over funds and new incoming dues.

FINANCIAL

California Eastern Airways stockholders approved an immediate post-merger plan at a special meeting. The present board of directors was re-elected, following a proxy battle.

INTERNATIONAL

Panair Jato, Ltd., British government-owned aircraft and development company, has accepted 54 million from the U.S. government as payment in full for claims against the use of British gas turbine patents. The payment also covers U.S. use of some 200 jet patents over the next 20 years.

Carroll Gordon, Jr., 49-year-old Canadian, co-director of DeLuxe Production, was appointed president and general manager of A.V. Post Canada Ltd., Toronto, replacing Walter Dunsen, vice president and general manager since 1945, and Sir Roy Dunsen, who serves from the president to board chairman.

South African Airways transport carrying 12 passengers and crew of four was reported missing on flight from Port Elizabeth to Durban.

BOAC Comet flew London to Singapore, 7,240 miles, at average speed of 497 mph in 39 hr. 5 min. including ground time. The 5-hr 27 min on the ground brings complete flight average speed to 317 mph. This Comet has been 495 hr. since April.

The Right Move for ECONOMY



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The Gear



The Model R-300-X high ultramicro strength ANGear is now available in withstand stress loads up to 500 lb.-in. For applications where the standard model R-300 with 210 lb.-in. rating is marginal, the R-300-X is the answer. It is especially suited for manual operation of remotely located valves or controls which may develop high back-away torques.

Both the R-300 and the R-300-X are used for transmission of 1/3 hp at 1,800 rpm. All models are fabricated for life and made with hardened gears, anti-friction bearings, chrome-plated axle and flanged end-mountings with internal pins.

See L&S Aeronautical Catalog for Dimensions

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SIDELIGHTS

Industry

► Bell Aircraft's backlog is nearly \$400 million, General Electric declines, and the firm is so deep in trouble that that portion of its 1957 business alone will almost equal the company's entire gross in 1955.

Suaveurs

► An Army's announcement that it is getting out the Navy's super helmet act forced up the "Space Marine" controversy some more. Newspapers a few weeks ago reported USMC pilots had chafed at "unknown" helmet along the East Coast. They were quoted as saying, "It was no helmet. But thanks to Dr. Leland at Office of Naval Research say he steadily stands by his previous position that people are wearing either helmet or flight helmet."

No Gifts, No Favors

► One major aircraft firm has put USAF's "no gratuities, no favors" regulations into effect with its own executives and employees in their relations with the company's military and subcontractors. A few aircraft industry executives put out of the house for the correct required regulations at Dayton are expressing appreciation of one, small aircraft firm, who have never done business with the Air Force before.

The Press

► A top Air Force official has reiterated the statement to the editor of *American Weekly* that the secret has been at Kansas light plane operations in "last secret." *American Weekly* has been withholding stories on Russian aviation that it could not check with reliable sources. Concluding on this policy, a Navy aviation official with access to intelligence reports says material that appeared in one or more reports recently on the subject was not more than 70% accurate.

► The *Orlando Tribune* magazine feature on the article in "War of the International Air Line."

► That new, two-weekly monograph on aviation came later published as *Aviation* by *American Republic Publications*, and ending subscriptions in the U. S. is run by *Forbes* G. Worcester, formerly a full-time writer on American Aviation.

► A group of Americans, headed by Ralph Cohen of the IAT's public relations staff in Montreal, is endeavoring to finance purchase of the magazine and daily editions of *Inter Area*, from firm.

► Peter Edson, Washington writer for *Scraps* Howard papers, said that as soon as President Truman signed the plan for publishing data about the B-51 Mustang, the Air Force worked all night long at Dayton, assembling models of the Mustang, F-100, F-105, F-106, F-107, F-108, F-109, F-110, F-111, F-112, F-113, F-114, F-115, F-116, F-117, F-118, F-119, F-120, F-121, F-122, F-123, F-124, F-125, F-126, F-127, F-128, F-129, F-130, F-131, F-132, F-133, F-134, F-135, F-136, F-137, F-138, F-139, F-140, F-141, F-142, F-143, F-144, F-145, F-146, F-147, F-148, F-149, F-150, F-151, F-152, F-153, F-154, F-155, F-156, F-157, F-158, F-159, F-160, F-161, F-162, F-163, F-164, F-165, F-166, F-167, F-168, F-169, F-170, F-171, F-172, F-173, F-174, F-175, F-176, F-177, F-178, F-179, F-180, F-181, F-182, F-183, F-184, F-185, F-186, F-187, F-188, F-189, F-190, F-191, F-192, F-193, F-194, F-195, F-196, F-197, F-198, F-199, F-200, F-201, F-202, F-203, F-204, F-205, F-206, F-207, F-208, F-209, F-210, F-211, 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F-1186, F-1187, F-1188, F-1189, F-1190, F-1191, F-1192, F-1193, F-1194, F-1195, F-1196, F-1197, F-1198, F-1199, F-1200, F-1201, F-1202, F-1203, F-1204, F-1205, F-1206, F-1207, F-1208, F-1209, F-1210, F-1211, F-1212, F-1213, F-1214, F-1215, F-1216, F-1217, F-1218, F-1219, F-1220, F-1221, F-1222, F-1223, F-1224, F-1225, F-1226, F-1227, F-1228, F-1229, F-1230, F-1231, F-1232, F-1233, F-1234, F-1235, F-1236, F-1237, F-1238, F-1239, F-1240, F-1241, F-1242, F-1243, F-1244, F-1245, F-1246, F-1247, F-1248, F-1249, F-1250, F-1251, F-1252, F-1253, F-1254, F-1255, F-1256, F-1257, F-1258, F-1259, F-1260, F-1261, F-1262, F-1263, F-1264, F-1265, F-1266, F-1267, F-1268, F-1269, F-1270, F-1271, F-1272, F-1273, F-1274, F-1275, F-1276, F-1277, F-1278, F-1279, F-1280, F-1281, F-1282, F-1283, F-1284, F-1285, F-1286, F-1287, F-1288, F-1289, F-1290, F-1291, F-1292, F-1293, F-1294, F-1295, F-1296, F-1297, F-1298, F-1299, F-1300, F-1301, F-1302, F-1303, F-1304, F-1305, F-1306, F-1307, F-1308, F-1309, F-1310, F-1311, F-1312, F-1313, F-1314, F-1315, F-1316, F-1317, F-1318, F-1319, F-1320, F-1321, F-1322, F-1323, F-1324, F-1325, F-1326, F-1327, F-1328, F-1329, F-1330, F-1331, F-1332, F-1333, F-1334, F-1335, F-1336, F-1337, F-1338, F-1339, F-1340, F-1341, F-1342, F-1343, F-1344, F-1345, F-1346, F-1347, F-1348, F-1349, F-1350, F-1351, F-1352, F-1353, F-1354, F-1355, F-1356, F-1357, F-1358, F-1359, F-1360, F-1361, F-1362, F-1363, F-1364, F-1365, F-1366, F-1367, F-1368, F-1369, F-1370, F-1371, F-1372, F-1373, F-1374, F-1375, F-1376, F-1377, F-1378, F-1379, F-1380, F-1381, F-1382, F-1383, F-1384, F-1385, F-1386, F-1387, F-1388, F-1389, F-1390, F-1391, F-1392, F-1393, F-1394, F-1395, F-1396, F-1397, F-1398, F-1399, F-1400, F-1401, F-1402, F-1403, F-1404, F-1405, F-1406, F-1407, F-1408, F-1409, F-1410, F-1411, F-1412, F-1413, F-1414, F-1415, F-1416, F-1417, F-1418, F-1419, F-1420, F-1421, F-1422, F-1423, F-1424, F-1425, F-1426, F-1427, F-1428, F-1429, F-1430, F-1431, F-1432, F-1433, F-1434, F-1435, F-1436, F-1437, F-1438, F-1439, F-1440, F-1441, F-1442, F-1443, F-1444, F-1445, F-1446, F-1447, F-1448, F-1449, F-1450, F-1451, F-1452, F-1453, F-1454, F-1455, F-1456, F-1457, F-1458, F-1459, F-1460, F-1461, F-1462, F-1463, F-1464, F-1465, F-1466, F-1467, F-1468, F-1469, F-1470, F-1471, F-1472, F-1473, F-1474, F-1475, F-1476, F-1477, F-1478, F-1479, F-1480, F-1481, F-1482, F-1483, F-1484, F-1485, F-1486, F-1487, F-1488, F-1489, F-1490, F-1491, F-1492, F-1493, F-1494, F-1495, F-1496, F-1497, F-1498, F-1499, F-1500, F-1501, F-1502, F-1503, F-1504, F-1505, F-1506, F-1507, F-1508, F-1509, F-1510, F-1511, F-1512, F-1513, F-1514, F-1515, F-1516, F-1517, F-1518, F-1519, F-1520, F-1521, F-1522, F-1523, F-1524, F-1525, F-1526, F-1527, F-1528, F-1529, F-1530, F-1531, F-1532, F-1533, F-1534, F-1535, F-1536, F-1537, F-1538, F-1539, F-1540, F-1541, F-1542, F-1543, F-1544, F-1545, F-1546, F-1547, F-1548, F-1549, F-1550, F-1551, F-1552, F-1553, F-1554, F-1555, F-1556, F-1557, F-1558, F-1559, F-1560, F-1561, F-1562, F-1563, F-1564, F-1565, F-1566, F-1567, F-1568, F-1569, F-1570, F-1571, F-1572, F-1573, F-1574, F-1575, F-1576, F-1577, F-1578, F-1579, F-1580, F-1581, F-1582, F-1583, F-1584, F-1585, F-1586, F-1587, F-1588, F-1589, F-1590, F-1591, F-1592, F-1593, F-1594, F-1595, F-1596, F-1597, F-1598, F-1599, F-1600, F-1601, F-1602, F-1603, F-1604, F-1605, F-1606, F-1607, F-1608, F-1609, F-1610, F-1611, F-1612, F-1613, F-1614, F-1615, F-1616, F-1617, F-1618, F-1619, F-1620, F-1621, F-1622, F-1623, F-1624, F-1625, F-1626, F-1627, F-1628, F-1629, F-1630, F-1631, F-1632, F-1633, F-1634, F-1635, F-1636, F-1637, F-1638, F-1639, F-1640, F-1641, F-1642, F-1643, F-1644, F-1645, F-1646, F-1647, F-1648, F-1649, F-1650, F-1651, F-1652, F-1653, F-1654, F-1655, F-1656, F-1657, F-1658, F-1659, F-1660, F-1661, F-1662, F-1663, F-1664, F-1665, F-1666, F-1667, F-1668, F-1669, F-1670, F-1671, F-1672, F-1673, F-1674, F-1675, F-1676, F-1677, F-1678, F-1679, F-1680, F-1681, F-1682, F-1683, F-1684, F-1685, F-1686, F-1687, F-1688, F-1689, F-1690, F-1691, F-1692, F-1693, F-1694, F-1695, F-1696, F-1697, F-1698, F-1699, F-1700, F-1701, F-1702, F-1703, F-1704, F-1705, F-1706, F-1707, F-1708, F-1709, F-1710, F-1711, F-1712, F-1713, F-1714, F-1715, F-1716, F-1717, F-1718, F-1719, F-1720, F-1721, F-1722, F-1723, F-1724, F-1725, F-1726, F-1727, F-1728, F-1729, F-1730, F-1731, F-1732, F-1733, F-1734, F-1735, F-1736, F-1737, F-1738, F-1739, F-1740, F-1741, F-1742, F-1743, F-1744, F-1745, F-1746, F-1747, F-1748, F-1749, F-1750, F-1751, F-1752, F-1753, F-1754, F-1755, F-1756, F-1757, F-1758



IN THE NEWS

SERVICE

Getting top utilization from jet engines requires many techniques. Here are a few of the services used by General Electric to help the Air Force get maximum use from its J47 engines.

To provide immediate service for General Electric airplanes, more than 30 G-E Service Shops are placed strategically around the country. Four of these shops are currently handling aircraft gas turbine work; more can be adopted as required. Skilled technicians provide rapid and complete repair and overhaul facilities.



At an Air Force base, a G-E representative shows Air Force personnel some fine points of jet engine servicing. To back up the field training, formal G-E jet engine schools have been functioning since 1942. Courses are now presented in fuel/handling, overhaul, flight test engineering, and line maintenance.



G-E service follows G-E equipment around the globe. Here, "tech reps" from General Electric and North American Aviation Inc. in Korea discuss combat performance of the G-5-powered, North American-built F-56 Sabre. G-E aviation field service representatives cover the vital spots in the world, are always available.

For quality products and dependable service, call on the company that pioneered the aircraft gas turbine industry. Telephone your General Electric aviation specialist or write General Electric Company, Schenectady 3, New York.

AIRCRAFT GAS TURBINES

GENERAL ELECTRIC

WHO'S WHERE

In the Front Office

Alexander G. Hruby, Washington attorney and former GAO and GPO counsel, has been appointed executive assistant to National Aeronautics with offices in Washington. During the war he served with Naval Intelligence in Chungking, China.

William R. Blackwood, retired account M of Miami, has been appointed to assist chief of studies in the Bureau Air Liaison. He formerly was secretary treasurer and a director of S. A. Lynch Corp., Miami, its record runs was treasurer and director of Florida Power and Light Co., and had served as controller for Deere and Rio Grande Western Railroad.

Vern E. Adams has been elected vice president of The Aviation World Agency, Inc., to succeed Alvin E. Hines, who will retire. Adams formerly headed the aviation management consulting firm of Alvin P. Adams and Associates and at one time was president of Western Air Express Corp., San Francisco.

E. J. (Bud) Hoken, former director of public affairs for Pratt & Whitney Corp., has been elected vice president of Grumman Company of America, Inc.

In the Plant and Field

Dr. L. T. F. Thompson has been named consultant and special deputy for technical operations by the president of Sikorsky Aircraft Corp. He formerly was technical director of the Engineers, Civil, Naval Aeronautics and Marine. William R. Kelle is now manager of design Corp's office at Dayton, O. H. Arnold Corbin, a new production manager for Canadian Aviation Electronics Ltd., G-E also has announced appointment of Wing Commander G. C. Chisholm as managing director of its aviation subsidiary in London.

F. N. Owen is now deputy chief engineer of General Electric Co. Ltd., and W. F. Shupler has been named company's commercial manager. General Electric Research Co. has announced promotion of chief engineering division assistant-Edward C. Conkling to chief engineer for product and design, Joseph E. Hinkle and Richard J. Hinkle to control chief engineers, Joseph F. Gies to chief metallurgy, W. S. Goldstein to chief electrical, William H. Morris to director of research, and Harry Packard to chief electronics.

Frank P. Smith, chairman of the board of Pratt & Whitney Corp. and winner the 1950 CWA Club Aviation Award for distinguished service in the development of Philadelphia aircraft.

Dr. Walter P. Schaefer, native of Berlin and wartime chief of medical studies in the aviation command of the Wehrmacht, has joined the faculty of the Air Force School of Aviation Medicine, San Antonio.

Honors and Additions

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INDUSTRY OBSERVER

Boeing Airplane Co. has made USAF a proposal to build two turbo-prop versions of its C-97 Stratofreighter double-deck, military transport and refueling tanker, one powered by Allison T-40 double-shaft engines, and the other powered by Pratt & Whitney T-34 single-shaft turbo-prop. Both have power ratings in the 3,500-to-4,000-hp bracket.

Century to local Ft. Worth reports, General Electric does not intend to build its electric aircraft engine at Ft. Worth near the Convair plant where the engine will be built. A small GE installation setup at Ft. Worth will probably be opened after the engine is fabricated and assembled at Lockland, Ohio, base plant for the new engine engine.

First deliveries of the production Aero CF 100 General Electric eight-light engine scheduled this month to Royal Canadian Air Force, out of more 50 new on order. And Aero Canada Ltd. is also developing two versions of the big eight-light 100 hp turbo-prop engine, will incorporate improved armament and radar, and later models of the General turbo-prop engine. The second version, designated CF 101, will have swept wings instead of straight and will be powered by super-Detroit engines of much greater power.

United Auto Workers' report that the Department of Labor open new proceedings to set an aircraft industry minimum wage of \$3.35 an hour (the current minimum at \$3.05) has been tentatively rejected within the department at least for the time being.

As Texas is preparing to cut service tests in a quantity of British built aircraft, it is also preparing to cut aircraft tests for general tests and for service procedure methods now used.

First successful application of the Bell X-1 supersonic research test plane in a military aircraft may be in an all-weather guided missile developed from the rocket plane. A special launch system to keep the missile down and forward from a mother-plane—a B-36 or B-50—is being prepared for the missile, which probably will be designed later.

British tests on welded plastic aircraft wings indicate that their structure are still not producing great plastic strength enough for general aircraft structure. Use of metal reinforced plastic is the use of their current research.

New flight tests done by Navy pilots on the big double-deck Lockheed Constellation XR801 for NACA study indicate time by between control systems and the control systems improve control performance than for similar airplanes. The XR801A airplane was heavily tested on all its controls. The tests which sought to investigate critical still loads included maneuvers in pitch, yaw, and rolling patterns with speeds for some maneuvers as high as 750 mph.

Automotive built by AeroProducts division of General Motors are coming into use in some interesting new aircraft, including the McDonnell XF-104A Demon and the Bell X-5 research variable-sweep-wing plane. A new hydro-boost hydraulic stabilizer with an electrical stabilizer system is supplied by the General Electric stabilizer. Two electro-hydraulic systems of special design are supplied for the X-5 to use the sweep of the wings and, at the same time, vary the position of the wing to compensate for the shift in the center of gravity of the airplane.

Use of the single-pole ground reference system for B-36 and B-50 bombers, has gone into service operation at General Electric, which is now in use of the unit's fuel side in the mainline plane that it uses in aircraft scheduling. New method requires a new type F-6 fuel tank, and stabilizer used for jumping the hose nozzle from one element to another. The new system pumps 600 gal. min. and is considered faster, with a single tank, than the old plan, even when two tanks were used.

Wilson vs. Sawyer

Growing behind the scenes friction between Defense Mobilization Director Charles Wilson and Secretary of Commerce Charles Sawyer is breaking into the open.

There's general administrative agreement, in principle, that Wilson's policy-making Defense Production Administration ought to be merged with National Production Authority, the operational agency in Commerce Department under Sawyer.

The issue whether control goes to Wilson or Sawyer The President is putting off decision.

When and if a decision, however, are made it will go in favor of Wilson. They point out:

• Of the two, Wilson's resignation would be the greater loss to the Administration. He symbolizes the mobilization effort.

• Secretary of Agriculture Charles Brannan and Secretary of Interior Oscar Chapman are adamant against lodging materials allocation control in Commerce—it would likely mean preference for business over farm and power requirements.

Meanwhile, Wilson and Sawyer are clapping on each other's toes.

• In testimony on Capitol Hill, Wilson made it clear he isn't satisfied with the way NPA is following through, is doing something about it, and intends to do more.

He says: "It is already becoming very clear that we cannot depend fully on the present functions of NPA."



WILSON: All the bottlenecks aren't in the business building.

let on any, with regard to certain industrial efforts. We have to insist that we have got to put on some trouble-shooters. For example, an zinc and copper and aluminum and machine tools, we have to expedite their [NPA's] permit efforts. We have to break the bottlenecks. We are getting steel organizations together. Today we are out combating the country to try to get a hold down exports that we can put on the bottle machine tool situation, which is a horrible bottleneck."

• And Sawyer is attacking Wilson's policy field. In a Tuesday speech, the Commerce Secretary advocated letting \$500 million in U. S. defense contracts to Canadian firms. When asked on the fresh northeast border problem by Sen. John Stawamus, Wilson replied: "I don't know anything about it. I just read about it in the morning's paper, too."

The next Wilson-Sawyer skirmish may be over funds. The Senate has okayed a 1059-trillion dollar of DPAN \$55 million and NPA's \$30 million—either way. The House will probably go along.

The proposal came from Sawyer and Maudy Flood, head of both DPAN and NPA. Floodman has sided with Sawyer all the way, since the start of the mobilization program planning for placement of DPAN, as well as NPA, functions in the Commerce Department.

Under the proposal, transfers "may be made by agreement between the Secretary of Commerce and the Administrator of the Defense Production Administration with the approval of the House of the Budget"—which would leave Wilson out.

No More Entertaining?

A contractor whose representative is as much as picks up the lunch check at a government office now risks civil arrest.

In relation to the "influence racket," Congress has just passed a tough law.

It says Any Defense Department contractor who offers "gratuities (in the form of entertainment, gifts, or otherwise) to a representative of the department 'with a view toward obtaining a contract or to secure favorable treatment with respect to the awarding or making of any determination with respect to the performance of such contract' (1) gets his contract canceled, (2) is subject to breach of contract penalties, and (3) is to be excluded from receiving any business from the government for the amount of the gratuity—over if it is only "offered."

What to Expect

• More law to officers taking high-paying jobs in industry.

Congress has already put one disqualification in their way. No more retirement pay for regular officers who voluntarily leave the service before reaching retirement age unless the individual is "able to perform the duties of his office" or the Secretary of Defense certifies that retirement is "in the best interests of the service, or is required to avoid cases of individual hardship."

Legislation introduced by Rep. Walter Noll, a member of House Armed Services Committee, would strip two congressional by legislative action before the age of 62, except for physical, mental or mental reasons.

• More obstacles for civil aviation, as military spending and aircraft materials, shifts into high gear.

Signs of this:

• Congressional opposition with Congressional of Transportation Dept. Reiter's report for \$150,000 for civil aviation mobilization. It was turned down in two Reiter's point that a plan for orderly sequencing of aircraft for war should be on hand, brought the "national spirit" "If World War III comes, the Department of Defense will have worked out its plan for mobilization and requisitioning of aircraft from the civil aviation industry. And then plan will be 'the plan because it is the Defense Department's plan'."

• Indifference that Defense Department won't back up subsidies to airlines as "essential" to "national defense."

• Office of Defense Mobilization's failure to give air transportation a place in the mobilization program.

—Katherine Johnson

AF Reveals Shifts in Aircraft Schedules

- Fighter schedule being switched from Republic to North American due to lack of forgings, engines.
- Other changes, mostly minor, to be disclosed to manufacturers soon in Washington program.
- But AF undersecretaries say in interviews that no drastic revisions are needed in current program.

By Rex S. Lee

New USAF aircraft production schedules involving major shifts at two plants and less drastic changes at others are to be spelled out to the heads of aircraft manufacturers within ten days when they are called to Washington to get their revised assignments.

Two of the nation's top fighter producers—North American Aviation and Republic Aviation Corp.—will figure in the most important reshuffling. NAA is being asked to step up production of the new F-86F version of its Sabre to take the place of the mothballed Republic F-84F which seems to be being dropped.

In interviews with Aviation Week, which carries USAF Undersecretary John A. McCone and his successor, Russell L. Colgate, issued any drastic revision to be made in current aircraft schedules.

According to Colgate, USAF is not rushing change programs to meet military production. There is no need for such a move, he says, because schedules are already in harmony with the military needs. Rather, he states, Air Force is moving delivery schedules in keeping with current and projected industry output capabilities.

"Only two major aircraft companies are to be materially affected," McCone declared. "We are shifting schedules primarily calling for considerable quantity of Republic F-84F aircraft to North American and are asking them to step up production of the F-86F correspondingly."

"Except for minor revisions to various schedules, none of which we anticipate enough in quantity," he said, "McCone continued, "no other aircraft manufacturer is to be materially affected. The industrial base for Air Force expansion has been laid."

"In my opinion, the existing base of itself is sufficiently broad and firm, ex-

cept in a few relatively minor instances, to support the aircraft and engine production schedules presently contemplated, without further increase in plant."

Wing Trouble—Colgate, explained that production difficulties in manufacture of the F-84F wing had necessitated switch of F-84F schedules to the F-86F. Design specifications of the F-84F call for large-headed wing span which would have been 100% beyond of Wyand-Gordon large span facilities without regard to its commitments to Boeing and other manufacturers. Until redesign of the wing is accomplished, production of the F-84F will be temporarily delayed.

Company officials told Aviation Week that the reshuffling would probably place F-84F production at Fairchild and place about the same volume to be made in current aircraft schedules. This would place production plans of the F-84F around September, 1952, officially disclosed. Air Force spokesmen said, a later start concentrating and placed initial production at Fairchild in beginning at year-end 1952.

Production Blocks

Colgate said that even if the wing span problem had not come up the unavailability of Cadillac-Wright J-65 Super-jets engine would have made the replacement of the F-84F orders an essay.

It is expected that Republic will increase its production of its current strengthening F-84F fighter for overseas MAFS use until it has developed their commitments. By that time the F-84F may be ready for phase-in as another look may be taken at the whole situation. But, in any case, compared with other aircraft schedules, Republic's fighter capacity is not a problem.

Other aircraft scheduled for consider-



McCONE: Production is a mixed picture.



REPUBLIC: No need to reshuffle.

wings of the Air Force are pretty much on schedule and with little delay at all, Colgate told Aviation Week.

While precise title of Boeing B-47 production is classified, deliveries of this medium bomber, in very small numbers, will fall short by something less than 35 aircraft this year. Colgate expects that Boeing will be able to pick up those deliveries in production problems or substituted parts. They have been hit, in some extent, by material shortages, labor and component shortages, particularly in electronics.

This situation at Boeing is typical of the entire industry. Shortages across the board have slowed production temporarily. Air Force is doing what it can

Box Score on Aircraft Materials and Tools

Tight supplies of aircraft metals and tools have been a major cause of the delayed production of fighters and bombers well into national defense. The situation in some cases will improve—most cases have eased the Pacific Northwest power shortage, which had hit aluminum production in other cases materials will continue tight. Here was the outlook last week.

Tools

Foundry equipment industry has upped its bids for increased allowances for its portion of the national final-use capacity to make castings for machine tools, engine blocks and other items. NPA officials have denied the proposal, on account of lack of materials.

Air Force has invited 150 machine tool builders and 45 tool designers to visit and close tool storage depots at Monrovia, Ca., and Omaha, Oct. 18 and 19 to select tools for lease to produce new machine tools.

Steel

Estimated supply of steel available for all programs military and civilian for first quarter

for 1952, is 21 million tons.

Structural steel authorized for national expansion in the first quarter 1952, will amount to about 30,000 tons more than for the fourth quarter.

Aluminum

Recovering from the effect of the drought-induced power shortage in the Pacific Northwest, many aluminum pot lines in that region are now running at capacity. National Production Authority reports.

Alumina Company of America estimates its drought-cut aluminum production losses will be 2.2 million lb. instead of 3 million lb. previously forecast.

NPA has exempted military aircraft manufacturers with A-1 materials allotment from first quarter allocations.

other manufacturers to reduce from 60 days to 93 days the supply of aluminum they can keep in inventory.

Direct military demand for aluminum will be 30 million lb. greater in the first quarter 1952, than in the fourth quarter 1951.

Copper

Defense Mobilizer Wilson has released 30,000 tons of copper from the national stockpile for defense needs in addition to the 25,000 tons of copper which was released Aug. 17.

NPA says it expects no significant change in copper production before 1953 and that with increases in mills virtually exhausted, copper production must supply all needs.

supply for each delivered month. Navy requirements in this field are similar.

Dr. Leonard reports that it would be expected to lower space requirements to a more realistic program with the production program is reorganized and stabilized.

The report indicates that supplies in reserve could be cut entirely in half until production gains are achieved without lowering the operational efficiency of the Air Force.

The Leonard report does not present change in policy for space and components procurement and delivery in large component storage facilities. It also says that they be used as a temporary expedient, but, Gillette said, from the long-range view, a lot better is necessary for military operations.

McCune's View—McCune, who had just quit the Air Force after serving a year to let up USAF production expansion (in it had agreed to with Air Force Secretary Friedman) is optimistic over prospects of Air Force substitution and expansion.

"As is inevitable within an economy in transition from a peacetime status to a condition of partial mobilization," McCune said, "the present production picture, under a lot of strain to sustain

for the Air Force in a mixed pattern of advancement and displacement."

"At the outbreak of the Korean War 25 months ago, the regular Air Force was a 48-year-old organization largely equipped for World War II service. Since that time, reinforced troop levels of the Air Force have been revised upward to 52, then 57 and now at 55 with reinforcement by the President and the Joint Chiefs that it must expand its facilities."

"One of the Top-down—This part may be described, in production terms, as the year of tooling up. By the end of the year, the company's goals have been set, without serious collision with the competing demands of the civilian economy and without strain upon the aerospace supply. Delivery of materials, today, and running at a rate twice that of a year ago."

"If the present pace is maintained, I am confident that the rate of production can be doubled again by next spring and more than tripled by the end of the year."

"When consideration is given to the fact that military air expansion is being brought off in the face of a revolution in aircraft and engine design resulting from the advent of jet propulsion and the penetration of the sonic barrier, I

believe a remarkable job has been done," McCune said.

Expansion Blocks

There had been full control of the progress of the expansion program from this point on, McCune said.

Shortage of machine tools. The greatest shortage in this round series, McCune said, is the result of two circumstances. First the machine tool is dirty was depressed for several years prior to the start of the present program. Some machine tool manufacturers had been shut down, others liquidated partially or entirely, and the industry as a whole was questioning it all.

Secondly, the extraordinary demands resulting from the acceleration design changes have in turn created a requirement for many new and unique machine tools in short supplies.

"The replacement program is going on, occupying the critical nature of this particular situation, has begun to apply remedial action. But still more vigorous action is needed forthwith. Even if such action is forthcoming, it is possible that a year will pass before full production of machine tools can start in many of the new sources, and it will be longer still before the system themselves are fully loaded up for production."

Fortunately the Air Force's reserve of machine tools has helped to tide the program over the first critical year. But by the first of next year, the Air Force's main reserve will be an "ad hoc" makeshift and could be lost, he said, because to additional and at yet still machine tools still held elsewhere in the military reserve, and next by the taking over of essential tools in private plants not yet participating in defense production.

"The right answer now would be to reach to the right to this particular bottle-neck. But now, it is difficult to say that we won't be at the end of the machine tool problem for another two years."

Critical Materials. "Third factor member two relates to the increasing shortage in critical materials. Here again the difficulty may primarily from the fact that the defense program must still compete, all too often in its desperation, with the civilian demand for prime materials."

"For example, the crisis in aluminum, precipitated in part by the hydroelectric power shortage in the Northwest, is almost certain to force a considerable cutback in the allocation of this essential material for defense production, even if we empty our declining stockpile."

"And the tight squeeze in copper, as yet unrelieved by the development of

new important new sources, is leading the Air Force program in many ways, particularly in the matter of electronics equipment."

In addition, the war industrial establishment, which, through the Colman and Calkins which were in short supply during the last war, are now in still shorter supply because of the over-increasing competition needed in jet engines.

"The jet engine program alone could conceivably exhaust the entire volume supply for some years to come, even though a series of important changes in engine design have in many instances made possible the substitution of more plentiful metals."

"The alternatives seem plain enough. Either we master materials, or materials will master us. The country is to have adequate air power, the control and allocation of critical materials must cut deeper than is presently the case."

Strikes and stoppages. "Third fact factor should be the serious threat of strikes and work stoppages that already approach industry, have involved wage negotiations. These constitute an obstacle to defense production as formidable as any of the machine tool and critical materials shortages."

The summer strikes among many major producers of materials and component parts have hit the aircraft industry particularly hard, most notably as regards the production of jet engines. The slow-down in production which thereby resulted has been further compounded by other strikes affecting major tooling industries and the aircraft industry's own plant operations.

"More concerns still, new studies of stopping production are already on the horizon."

"I do not propose to attempt to pass over the records of these management-labor disputes. But it is pertinent to say, the consequences of interruption, whether on labor or management's side, can no longer be tolerated. The public interest demands, it now seems plain to me, that at least during the critical months ahead, while the military establishment is being brought up to strength, nothing less than full and uninterrupted production shall be acceptable."

Navy View

Replying to an Aviation Week query, Navy Bureau of Aeronautics last week stated that it does not anticipate calling in representatives of the aircraft industry "en masse" to confer on production status or plans for new production schedules.

Baker, it was explained, has been operating on a balanced airborne-engine schedule basis for some time. When stoppages occur either in engine or na-

viene production, the Navy continues affected are notified and their schedules adjusted accordingly.

For example, there is at the present time some alignment in connection with McDonnell F-104 production program which is under study. Contractors concerned will shortly be notified and their schedules adjusted, Baker said.

It's Definite Now: CAA Takes a Slash

Sharp attachment of Civil Aeronautics Administration funds is now definite for 1952.

The \$155-million fiscal 1952 outlay for CAA which Congress forwarded to the Senate House for the \$134 million with the \$14 million allocated for 1951.

The President had asked for \$300 million. The House voted \$180 million, the Senate \$155 million. A final vote will be taken when a final vision before that originally won.

Civil Aeronautics Board had better. The \$16 million family approved comes with \$3.5 million for the Board but \$12.5 million for the President had asked for \$3.9 million.

This is what CAA has to spend during the 1952 fiscal year.

Establishment of air navigation facilities—\$10.5 million, plus \$12 million to liquidate contracts already entered into CAA had \$19 million for new obligations last year.

Air navigation development—\$15.74, \$6.2 to wind up the long range program and \$9.54 for new obligations in the air on all other flying system.

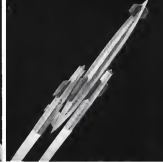
Aircraft—\$10.7 million, plus \$10 million to liquidate old contracts. This will mean a slowdown in projects already authorized, but CAA plans for moving ahead with new projects. CAA had requested \$24 million for new projects, and in addition planned to spend \$30 million last year for liquidation contracts. CAA had \$24 million for new obligations last year—\$3.5 million less than it will have this year.

Administration—operation of the bureau, safety enhancement, etc.—\$99.16 million. CAA spent \$99.69, \$54 on these activities last year, when it didn't have the burden of additional obligations on traffic.

Technical development—\$8.2 million. CAA had \$1,175,000 last year.

Washington. National Airport—\$1,300,000, for operation and maintenance—the amount required last year, plus \$75,000 for construction.

Commercial flying. The bill is not possible for the first time. Congress turned down the request for \$600,000 to get the program for better new types of planes for commercial operations under way.



RAMJET-POWERED missile would use adjustable air scoop with boundary layer bleed for low-speed use as an engine booster. Other model has...

TWIN RAMJETS mounted on wing, a configuration used for research on non-rotational missile behavior. Both models have control-type boosted controls.

NACA Designs for Super-Speed Missiles



GOOD design for hypersonic speeds, 1,200 mph plus, proposed at NACA's Flight Propulsion Laboratory (left) offers an alternative to double-bowl engine thrust, offering small nozzles. But this...

BAD design, with unswaged jet engine sufficiently powerful to give same speed (right) would require large nozzles. Report on other NACA research at the Lewis Lab is on p. 15.



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Why Accept Anything Less?



U. S. DELEGATES to astronautics congress (left) American Rocket Society's R. C. Bennett and A. G. Haley, and Pacific Rocket Society's E. V. Sawyer

- Payload scheme for space "platform" topology.
- Return flight techniques.
- Nuclear energy applications.
- Military and civilian effects as affecting the overall program.

1. Instrument Carrier

It is now generally agreed that an earth-orbiting vehicle placed in a stable orbit at some definite altitude outside the earth's atmosphere could perform a large number of functions. This utility, together with various aspects of satellite-vehicle design and operation were discussed in detail in the 177 papers comprising the technical session.

One of the first applications is likely to be a small sub-orbital carrying vehicle in a class orbit at about 100 mi altitude.

Three Step Rocket-BIS's R. W. Galt and A. M. Kowach and A. K. Dumas in their paper, "Manned Satellite Vehicle," advanced the possibility of putting a 600 lb. payload of instruments and telemetry equipment into such an orbit. They concluded that it could be done with a three-step rocket using liquid oxygen hydrazine, and weighing 94 metric tons (more than space 2,304 lb.).

Continuation contemplated would be the further advanced fleet of the Minuteman, and the low cost orbit would be obtained by ramjet, all the payload tanks of the first two as they are used before the capsule step is jettisoned.

2. Freighter Scheme

As freighter programs, an orbital space-station will be required for research, for example, as an astronomical observatory, and as a military base for true intercontinental operations. Construction of this orbit "freighter" would accelerate the use of launch vehicles capable of taking the station materials into the orbit. These freighter vehicles were considered by various readers.

Four Step Rocket-Ship H. Hoeggen of Germany's Gesellschaft für Wel-

traumschiffbau, described a four-step rocket capable of carrying a load of 5.5 metric tons into an orbit at an altitude of 1070 mi., the orbital period being 2 hr. at this height.

Costs of the complete configuration would be 571 metric tons, its overall length 115 ft., and maximum diameter 10 ft.

Propellant mixture would be nitric acid and hydrazine, assumed to have a specific thrust of 100 lb./70 sec. The first two stages are intended to be recovered by parachute, the third discarded, and the last to remain in the orbit, although a return also was described which is fitted with wings for gliding back to a piloted landing on earth. A brief summary of the relevant data is given in the accompanying table.

3. Return Technique

Constant problems in the glider return technique from orbital altitudes appear to be the aerodynamic heating. This was dealt with in detail by R. L. F. R. P. Newton, who proposes an all-wing delta-type glider using a double wedge section with the maximum thickness well back.

With a reentry speed about 15,000 ft./sec. the maximum skin temperature within manageable limits. Assuming a reentry allowable temperature of 1500°C, which would occur



PAIDLOAD as function of glider size (avg loading 6 Btu/sq. ft.)

on the lower wing surface near the leading edge, then a 5-ton payload could be lifted down in a craft with a gross weight of 20 tons (avg loading).

The Lander—There would appear to be a limit to the permissible period. This is at a gross weight of 10 tons and payload of 7 tons. Above this limit the period decreases with increasing gross weight.

It was pointed out that as the high temperature zone was located it might be possible to raise the local allowable temperature by means of a ceramic insulator. Even a small increase in temperature would have an appreciable effect on the maximum allowable size of glider.

4. Nuclear Power

Still further in the future is the use of nuclear energy for spacecraft propulsion. About 1960, artificial satellites may play an essential part. Prof. Leonie Spector, 315 member, who also is in charge of Princeton University's observatory, reported what may prove to be the most economical method of using nuclear energy for such a project.

A ship moving from a satellite orbit around the earth to a satellite orbit around the moon at another planet would require only a small acceleration and could therefore use a small thrust over a very long period.

As electricity generated on board could be used to achieve an ion stream velocity of 50 mi./sec. without the use of very high temperatures in the propellant gases. Gases released from planetary atmospheres could be used for the propellant. The consumption would be very small, consequently low mass ratios could be used.

5. Civilian Effort

In an interview with the Associated Press representative Dr. Eugene Sengier, famed rocket pioneer and authority on flight at extreme altitudes, voiced the opinion that the requirements for military long-range rockets and artificial satellites exist on divergent paths. For most military purposes, the available rockets with low performance and propellants would suffice, hence only a small percentage of military effort was likely to be put into developing high-performance propellants such as liquid hydrogen-hydrogen and liquid oxygen-hydrogen.

Also, such propellants are ready at present extremely difficult to handle and some of these might present very expensive, two further points against their use by the military.

Job for Civilian—Sengier emphasized that the best way of producing an instrument-carrying, satellite vehicle, accurate, low-cost, and easy to operate, would be to get on a civilian market for that purpose, rather than rely on military contracts.

Results, pointing, this would be devoted to research, so basic problems arising in the development of an artificial satellite and the practical applica-

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tions of these studies. One of the main items would be the development of high performance propellers and the output base work, particularly in heat transfer.

Assuming that no substitute of opportunity exists for the same and with the same facilities as Permanent (where V-2 was developed) was available, it should be possible to develop an even more capable vehicle within 10-12 years.

Since a president of the new Federal Reserve is collaborating with Dr. Joseph Stiglitz, he was responsible for the work on Germany's round-the-world rocket bomber program. Although this project was never completed, much work was done on the 300-ton thrust rocket motor at the T-10 research station, where Stiglitz was in charge.

Other key personnel in the Pentagon are top executives, Andrew G. Miller of the American Rocket Society and Dr. G. Louis of the Goddard Space Flight Center.



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Style—The aeronautical profession is best by statistics and failures. For a few years an attempt is made to operate everything electronically, then hydraulics because the rigs, face a revision to mechanical controls. At the present time there seems to be too much submission to the god of electronics. Experience of all these things shows that there is no such thing as a free lunch and they all have their place, the one that will do the best job should be chosen, not

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Proper functioning is more important than style or appearance, and the designer who attempts to force his brain child into a form which creates, in aesthetic sense, at the expense of its performance or flight characteristics has not done a good job. There is no need, as with cars, to maintain a decorative maintenance to identify the product.

There is comfort in the fact that a device which is truly functional usually looks right and very seldom will offend the aesthetician.

Premises, enthusiasm and a good conception must be rightly put to one side if a well-tempered architect is to be achieved. All through the design phase, choices have to be made between various ways of doing things.

In the early stages these choices tend to affect the ground arrangement and step design later on they affect smaller parts. These choices must be based on the best information and analysis, with a minimum of step demands or decisions influenced by emotion. The design must be progressively frozen as it goes along, neither too early nor too late. Too early is responsibility; too late is perfectionism.

► **Productivity**—Aircraft production at least is not high-volume production, and the type of tooling required, except for a few items such as standard bolts and nuts, is not high-production tooling.

Such tooling is far too inflexible to accommodate well to the constant stream of changes which is an ineluctable concomitant of aircraft development. This lesson was learned the hard way by the motor industry during the recent war, when it was pressed into the main factor of aircraft.

There has been considerable progress since aircraft were made by hand with little or no tooling. The current middle course is to provide comparatively simple tools which can be augmented or discarded if production is stopped and which can be thrown away if the design is changed. The true philosophy of a design is that tool should be used in the sense of its adaptability to the use of this type of simple tooling.

- **Straddle-legged**—Even the most conservative place is far from being as



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assembly of standard parts, but stand substitutes place its part in good design. Good standards are those which result almost from necessity. They are developed because it is apparent to everyone that it would be highly inefficient not to develop them.

Standards which are imposed by edict or which have to be examined down people's throats are almost always bad standards, with a strong effect on progressive design. Standard practice, a broader type of standardization than standard parts, can be a most useful adjunct to design by ensuring the uniform execution of best previous experience.

Engineering, tooling, and shop should keep close to each other, carefully and physically, during construction of the prototype. It is a time effort and must be carried through at that point.

4. Development

► There should really be more than one prototype, not only because of the vulnerability of jettisoning all the eggs in one basket, but also to shorten development time by running tests in parallel. In some instances, overall expense and time can be saved by having as many as ten or a dozen articles in flight but states concurrently. There are, to say



event, good reasons for having at least two.

► The True Log-Exponential shows that normally it takes at least as long to perfect a design after first flight as the time that has gone into it before first flight. For example, if it takes 15 months to design and build the first prototype, it will be at least 30 years from the start of design until the aircraft is taken down and ready for production deliveries.

A better conventional design is one with a high degree of common sense, proven experience may, upon occasion, be put into production before the first article has been tested, with reasonable assurance that the changes required will not be so drastic as to necessitate re-building.

But usually there has to be a gap between the completion of the development period and the start of production deliveries. In some cases this may have to be as long as the time it took to build the first article. This would mean, in the example chosen of a 15-month aircraft, that production deliveries might actually start somewhere between two and a half to nearly four years from the beginning of design.

Very seldom is full allowance made for this in buying cost schedules. As a result, aircraft which are built and received are delivered to service somewhere and spend much time on the ground or deliveries of fully developed aircraft come much later than optimistically predicted.

Placing one time is expensive, particularly on modern aircraft, and can be shortened by suitable preliminary re-



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function of the way in which the aircraft operates in a whole to its motion. Here also enters, too often for the first time, the human equation in the form of the pilot and crew.

There is an increasing awareness of the fact that the experience and point of view of operating personnel should be intimately joined with that of the designer from the beginning.

Even if this has been done, it still remains true that the crew, and particularly the operating personnel, can only evaluate the aircraft . . . by actually flying it.

The airplane is first of all a flying machine and there is no substitute for good flying qualities. Not only do they determine the ease with which it may be flown, its maneuverability, and its driver, driver performance, they are directly related to safety.

If the pilot is at one when he is flying the aircraft, if he knows he will have control over it under all conceivable circumstances, he does not tax and he does the right thing under stress.

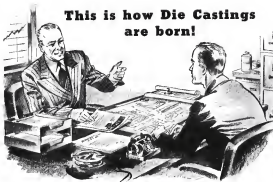
If he is nervous and apprehensive, or has to fight the controls as he overcomes his state of mind adds to the inherent difficulties. A good flying plane must be obtained first of all; the rest can be added later.

► What You Learn—Functional characteristics come next. Do the instructions on board the aircraft operate properly under all service conditions? Is it easy to climb, fly level, descend, cold and hot weather, ice and snow, humidity, etc., do not always have up just when desired for test purposes.

With the great confidence and long range of early modern aircraft, and their standards of low observation, these functional characteristics have to be evaluated over long periods. As these true assessments the type of test observations being obtained gradually shifts from that which establishes how fast it will go, how high it will fly, its climb and landing distances, and whether the electrical installation and its conditional controls operate properly, to determining as to which design have to be introduced to lighten the burden overhead or reduce the noise level of takeoff.

The only way to get this information is to put in the hours and fly in where

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among acquainted with something new can be very awkward if a well thought out and suggested program is not put into effect to bridge it over.

► **Facilities**—In addition to knowing how to maintain and service the aircraft, the operator must have adequate and proper facilities. Thus, also, he can be assisted by good planning and timely delivery, so that the facilities are ready when they are needed.

Some of these facilities will be common to all or several types of aircraft which the operator may. Others will be special to a particular case. For example, servicing stores, landing equipment and loading equipment often have to be specially designed and built. Sometimes the operator may do this.

Just make others that his auxiliary pieces of equipment can best be developed by the aircraft builder with the advice and assistance of the operator, and one be determined with the aircraft itself.

► **Space**—Nobody knows ahead of time exactly what items, and how many of them, will be needed at any time. Nevertheless, working from statistics accumulated on other aircraft, a reasonable idea can be made during the initial design phase and then these can be visualized with the early production aircraft.

The nature of military operations makes the problem of space particularly difficult, but different services and different countries vary in the difficulty with which they cope with it. It should not be necessary to rely one aircraft to simple deficiencies in aircraft, but each causal position was often the only way to keep aircraft flying during the most war.

Spares for military aircraft are often badly handled. Large supplies and work shorthages go hand-in-hand and things are seldom where they are needed, when they are needed.

Military spares supply can be simplified by the use of all transport. Depots can be further from the front and fewer in number and there can be more flexibility in the whole operation if time is better is counted in hours instead of in days, weeks, and even months. In Service. It is not enough to see that replacement parts are on hand when needed, changes must often be made in the design of parts to stop repeated troubles or lengthen service life.

There must be a methodical reporting system, by which the manufacturer is made aware of the problems in the area, in sufficient detail to enable him to duplicate the case and work out a cure. There must be direct continuous personal contact by men in the field.

Extensive reports of handling the correction of troubles of a serious nature must be coupled with an overall system that overbooks nothing.

The service information has to travel both ways. The operator does not always need replacement parts, he needs instruction as to how to make his own correction on the spot, or he needs assurance that the operation he is going to make is satisfactory. Also, the whole service record of a piece of aircraft has to be available to the manufacturer a suitable acquaintance and grow to his knowledge so that they will have the benefit of knowing how their previous designs worked in practice when they design a new aircraft. Only as they can do their job experience and by going out into the field as often as they can.

► **Technical Assistance**—Cases of instruction, personal contact and service bulletins supplement knowledge by the physical plane itself, and the technical staff that has to be supplied with it. Operating manuals, maintenance and service manuals, selected drawings, structural and development data all represent a tremendous effort on the part of the manufacturer to assist the operator that his operator gets maximum utilization.

If these can be a day when the manufacturer could build his product and forget about it, it is gone forever.

When per day must be kept constantly in mind. An aircraft is designed to fly, while it is in the ground it is so good to nobody. This is where the operator and the civil operator with the military services at it rise as time of use and potentially true at all times. In terms of peace the military services have to assure themselves by aerial test that their personnel are trained for constant operations and that their aircraft are capable of it.

In the development of the techniques that make this use of operations possible, the aircraft can be greatly assisted by the civil operator. Each gives much to the other. The civil operators would not have many of the devices they use had not the military services first developed them, nor would many of these devices ever have reached their present state of perfection had not the civil operators put them through months and years of almost continuous service.

And through all of this time period the developer must remain alert to help, to learn, and to put the customer's experience into practice.

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Not, PLEASE, In the Name of Fairness

Our national Office of Economic Stabilization has adopted a policy of gearing wages to the cost of living. We are told that "escalator clauses," which provide that rates of pay shall be adjusted to take account of changes in the cost of living, will be generally approved.

If the adoption of this policy had been announced as a frank concession to political expediency, it would have been quite understandable. There may very well be votes, lots of them, in a policy which purports to protect the income of a large group against loss through the price inflation caused by the defense program.

A case might even have been made for a policy of approving escalator clauses on grounds of production expediency. The leaders of some three million organized workers now covered by such clauses have indicated that they would fight to the limit to keep them and thus maintain "real wages," that is, wages measured by their purchasing power. The leaders of other organized groups have indicated they would fight to get the

benefit of such clauses. Denial of them might mean serious strikes.

Justified "in Fairness"

However, the policy of approving escalator clauses was not based on these relatively low grounds of expediency. It was justified on high moral grounds, on grounds of "fairness." In the words of the President's Council of Economic Advisers, "maintenance of real wages during inflation cannot in fairness be disallowed."

That proposition is false.

It would be truthful to say, "maintenance of real wages during inflation cannot in fairness be allowed."

The truth of the corrected proposition becomes evident immediately when you take a look at the basic nature of the inflationary problem created by defense mobilization.

We are devoting a large share of our national production to defense. The share is now scheduled to hit about 20% in 1953.

Since we are not able to increase our total production fast enough to meet defense needs

in addition to civilian needs, that means a cut in the supply of goods and services that is available for civilian consumption. But the money paid out for the production of defense materials is added to that which is available to buy civilian goods.

Thus, more money is put into the hands of the people to buy less goods. So prices go up. That is inflation.

If one group of people then is granted enough additional money to offset the price increases—and that is the purpose of an escalator clause—and thus can continue to buy as much as they have been buying right along, less goods will be left for other consumers who are not getting this advantage. That is palpably an *unfair* distribution of the sacrifices necessitated by defense mobilization. In fairness, therefore, maintenance of real wages in inflation cannot be allowed.

Organized workers were not the first, of course, to get the benefit of an automatic adjustment to take account of the increased cost of living. The farmers get theirs first. The price parity formula is, in essence, an escalator clause. The federal government underwrites increases in the prices of the things farmers sell in order to match increases in the prices of the things they buy.

Crucifying the Helpless

As matters stand, two groups are without benefit of escalator clauses. One group is composed of manufacturing firms. While they have not been nearly as successful as the misleading reports of "record-breaking profits" suggest, they have been able to look after themselves fairly well—thus far.

But one group is completely without protection. It is that numerically large but politically unorganized mass of people—many of them old and relatively helpless—who are trying to live on pensions, annuities and other fixed incomes derived from their savings. They are at the end of the line when the increased costs of inflation are passed along. They have no one to whom they can pass the buck. They are being progressively impoverished by the continuing inflation caused by progressive boosting of costs and hence prices.

With the present line-up of pressure groups in Washington, protection for the principal victims of inflation—those who have saved for a rainy day only to find inflation has blown away the roof—is obviously an extremely difficult business. But to have even temporary insulation against inflation granted to powerful groups in the name of fairness should be offensive to the nostrils of a nation that presumes to assert the moral leadership of the Western World.

The only really fair way to handle inflation is to prevent it. But once it is under way, fairness demands that the burdens be as evenly distributed as practicable.

An escalator clause—or a farm parity provision—is explicitly a device to enable the group favored by it to escape the burden of inflation. Whatever concessions we feel we must make to political pressures or production expediency, let us at least be honest enough not to invoke "fairness" as justification for so arbitrary a discrimination in the distribution of the defense burden.

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PRODUCTION



Giant Wing Section in One Piece

Lockheed replaces 1,500 parts with one in forming 32-ft. composite component on Giddings and Lewis' skin mill.

A single of the same-size aircraft components that are put aboard the carrier has been introduced by Lockheed Aircraft Corp.

It is an admirably efficient wing piece measuring 32 ft. long by 4 ft. wide and representing the type that soon will be mass produced on Lockheed's large new Giddings & Lewis skin mill (AVIATION WEEK Feb. 9, p. 40).

Pilot Piece—This particular wing piece, which was made for Lockheed as a pilot piece for a tooling check, was designed for the Super Constellation. It is reported to be the largest single piece of wing ever fabricated. Lockheed officials will not cut such a considerable.

The self-stiffened piece is 123 lb. aluminum alloy strip—cut from a 3,149-lb. slab and replaced complicated assemblies that normally would be composed of about 1,500 parts. More than 100 man-hours of working are eliminated by the panel making.

Cost of this last piece is about \$7,000. But when the new skin will get rolling, machining expense is expected to be halved.

Lockheed reports that a structural strength increase was possible in the 32-ft. Super Constellation with composite wings and for a faster speed if proper bonding could be achieved. Conventional methods of construction were prohibitive due to weight and cost.

Stiff in Constant—In the new fabrication for the wing section, channels are cut down the length of the 12 in. thick plate, leaving standing ribs about 1/16 in. thick in between. The wings require no long panel touch wing has the 4-ft. width attached on either side to support panels measuring from 11 to 23 ft. wide. It fits between the main wing beams on the underside.

Smaller self-stiffened pieces, fastened in place by welding machine experts, have been used by Lockheed for some time on fighter wings and transport center sections. And with the composite's required machining facilities the process will be used more extensively on both military and commercial aircraft.

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cheaper wings—that there will be no need to substitute straightback for the straight wing in the neglected segment to delay compressibility effects, the straight configuration giving better handling qualities at low speed and better maneuverability at high altitudes and speeds (Aeronautics Week June 25, p. 10). An example of this application is the dual, integrally stressed, straight wing on Lockheed's F-94C which will support a dead load of 150 tons.

Temco Moving

A move by Temco Engineering & Manufacturing Co. to transfer all of its extensive Douglas C-54 overhaul and conversion work from its Dallas, Tex., plant to a separate facility about 20 miles away at Meigs Field, Greenville, is well under way.

By the end of the year, when the transfer is completed, Temco will be employing approximately 600 people at Greenville, with people moving over \$5,500,000 monthly. Current employment there is about 100. The new base is already overhauling all C-54 control surfaces and tail assembly units and is transferring other wing gear and control production from Dallas. Most major shop work is in the shop of Temco's electronic instrument, propeller, radio, radar, hydraulic and avionics shops.

Since May, 1945, the company has expanded and manufactured approximately 950 C-54s for the USAF, in addition to working on a number of F-51 and F-47 fighters, conversion of C-54s into hospital planes and C-47s into converted planes, and handled large quantities of work for foreign governments and various airlines.

The new Greenville installation is headed up by Harold Jeffery, superintendent in charge.

Cladmetal Patents New Bonding Process

A patent covering an improved method for producing clad metals, in which Roslyn Metals, which provides for continuously bonding thermally stable steel and copper, has been granted American Cladmetal Co., Cincinnati, Pa.

The finished product is soft and devoid of "cold chills," even when it is cooled solid. Also, the bonding operation is accomplished without materially reducing the thickness of the composite sheet.

The new process is significant since Roslyn Metals is proving itself in high temperature applications. Because the metal is used to conserve up to 35% of critical materials such as cobalt, nickel, chromium and columbium, it is finding favor also in general applica-

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Republie Tackles Employe Shortage

Nine months ago, Republie Aviation Corp. faced with the critical shortage of aeronautical engineers, inaugurated a training program to fit engineers having little or no aviation experience into the company's expanding research and production program.

Since then nearly 400 non-aeronautical engineers have successfully made the transition, 361 becoming drafting engineers, 2 thermodynamics, 4 aerodynamics, 2 flight test, 13 stress and 12 research men. Previously these men had held jobs in science, architecture, art and other fields.

Also paying dividends is Republie's new in-house engineering office, opened last June in New York City, to bypass the commuting problem.

A shop training program for teaching skilled workers to assemble marine turbine propellers has produced over 1,500 employees. Two week's instruction was given in welding, bench and chassis work and assembly. Eight-week courses in welding and jig building were also offered the trainees.

Republie training centers were set up at Farmingdale, Freeport, Brooklyne and Hempstead, L. I. The facilities were made available through cooperation of the New York State Department of Education and the local board of education in each of the four communities.

In addition to these two training centers, the Joyce Jones School of Aeronautics operated Navajo Aircraft facility near the Republie plant in the past, which was to supplement its La Guardia Field school in pre-employment training.

Republie presently employs more than 13,000 men and women on its large F-84 Thunderbolt production program.

General Paint Forms Aviation Department

A new Aeronautical Finishes department has been set up by General Paint Co., Los Angeles, which will develop and produce aircraft products exclusively. Products to be manufactured will include aircraft finishes, adhesion and maintenance base products and special developments such as paints, lubricants, solvents and sealants.

The company's other five paint plants will aid the new division. The department is being headed by Harold L. Acker, aircraft finish specialist and developer of aircraft and aircraft paint.



In Aircraft Fan Design

Only **JOY**
AXIVANE
FANS

Offer All These
Advantages



CAST-IN STRENGTH

The outer casing, auxiliary vane, and the inner casing are a single casting to provide maximum resistance to shock, and to prevent strain under working conditions.

LIGHT WEIGHT

These fans are not only compact in design, but are available in either aluminum or magnesium to reduce overall weight to a minimum.

VANEAXIAL DESIGN

Auxiliary vanes provide an equal pressure and velocity distribution at all points across the fan outlet, thus producing an air flow pattern substantially free from turbulence.

AERODYNAMIC ENGINEERING

Both the blades and auxiliary vanes of Joy blowers employ aerodynamically-efficient airfoil shapes, to insure the most favorable electric-to-air power ratio.

PRECISION CONSTRUCTION

The tapered-off blade-tips clear the casing by only a few thousandths of an inch to minimize tip loss, a common cause of fan inefficiency, and to reduce noise.

COMPLETE LINE

Joy offers a wide selection of standard single or two-stage aircraft fans, as well as custom-designed types, for all ventilating, heating or cooling problems on military and commercial plants. Optional features include straight or flared inlet, beaded or flanged connections, cable noise-filters, sound-dampening, and cooled motors where required.

UNMATCHED EXPERIENCE

Joy is the world's largest manufacturer of vaneaxial fans and blowers. Fans for all purposes, ranging from 1/25 H.P. to 3000 H.P. and up, with fixed, adjustable, or constant blade pitch, combine the unsurpassed background of JOY engineering experience.

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SINCE 1940 Schuttig and Company has been designing and manufacturing electronic devices to meet exacting requirements of government agencies, manufacturers and airlines. As specialists in communications, remote control and navigational equipment, both ground and airborne, Schuttig has earned its reputation for electronic precision.

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EQUIPMENT

Card-Index Overhaul Cuts Braniff Cost

- "How to do it" described in drawings, instructions.
- System permits precise allocation of men, parts.

Dallas—A recently patented "Work Schedule" program which sets up in advance the exact pattern, tools and parts to overhaul an airplane, including instruction cards for the mechanics, is saving Braniff International Airways countless thousands of man-hours when turning in DC-3s and DC-4s. This will be applied to Braniff's DC-6s as soon as possible.

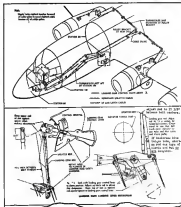
Here is a table of the real savings derived from this method of overhaul mechanics required for the first DC-3 5,000-hr. inspection under the new system were 4,695—a reduction of 1,006 from the 5,701 previously required. And this despite the many "bugs" which inevitably accompany the establishment of a new method plus the fact that the mechanics were unfamiliar with the operation of the "planned overhaul system."

• **How To Do It:**—This key to the system are precise pre-planning to forecast accurately the work to be done on an aircraft, allocating manpower efficiently over the airplane to avoid confusion among mechanics and the work card, the front of which tells a man what to do, the reverse how to do it. Braniff has given particular emphasis to the "how to do it" side of the card which includes explicit instructions on how to accomplish the job accompanied by detailed drawings showing the area of the shop where the job is to be performed.

Gene Norris, assistant to the director of maintenance and engineering, cited these advantages of the system as compared to the old "work sheet" method previously used.

- **Jobs** required for each job are broken in advance. They are drawn from stores and are placed in crates immediately adjacent to the aircraft. Results: If parts are short they can be projected in time for the plane's arrival in the shop; mechanics do not waste time chasing parts and bring up outside their rooms to get parts or materials to work with.
- **If** working the cards in proper sequence, a logical, coordinated series of jobs will be performed in correct order

WORK SCHEDULE		PLANNED MAINTENANCE WORK CARD	
DATE	TIME	PLANNED	ACTUAL
1951	10:00	1. Inspect engine oil pressure	
		2. Inspect engine oil pressure	
		3. Inspect engine oil pressure	
		4. Inspect engine oil pressure	
		5. Inspect engine oil pressure	
		6. Inspect engine oil pressure	
		7. Inspect engine oil pressure	
		8. Inspect engine oil pressure	
		9. Inspect engine oil pressure	
		10. Inspect engine oil pressure	

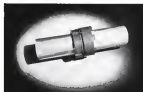


In the Cards Front of Braniff's work card (top) tells what to do. Back of card, part of which is shown (below) tells how.

IN THE AIR-IT'S *Convair*



ON THE *Convair*-BUILT U. S. NAVY XP5Y-1 IT'S THE **FR** PIPE CONNECTOR*



One of the latest additions to the proud CONVAIR family, the XP5Y-1, will help maintain the U. S. Navy's command over the seas.

It is natural that the builders of the CONVAIR XP5Y-1 have sought to incorporate

the best equipment available. We are proud that CONVAIR has decided to use FR Pipe Connectors throughout the aircraft.

The FR Pipe Connector is the product of over fifteen years' research and development in the pressure fueling field. Light in weight, yet rugged, the FR Pipe Connector has advantages not shared by any other pipe coupling method.



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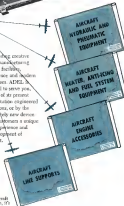
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Here is an outstanding creative engineering and manufacturing organization in its facilities, versatility, experience and modern production processes. ADEL is superbly equipped to serve you, whether with one of its prime products, an adaptation engineered to your specifications, or by the creation of an entirely new device. ADEL offers its customers a unique combination of experience and facilities for development of aircraft equipment.



Whether your current equipment problem, it's a challenge to

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CANADIAN REP. BAUMAY & POWER ENGINEERING CORPORATION, LIMITED

without duplication and congestion in certain parts of the plane (such as the cockpit).

It promises to be a constant possibility of increasing manufacturing work to be processed. On the work cards it printed all the information required to do the work correctly showing pre-measured tolerances, torque values, rigging instructions etc. with appropriate diagrams and drawings. Secondary advantage is elimination of indices and time-consuming task of looking up these data in the maintenance manual. It also simplified the accounting department task of allowing necessary changes against an aircraft for the work done on it.

Each machine punches its card out on the end of a massive strip. When accumulated in enough quantity, these strips will allow direct passage to automatic work coordinate machine for long individual strips of work to take and to cut them up with the correct number of strips for each visit.

With savings already realized on the DC-8 and its BNT is looking forward to avoid more substantial economies when the system is set up for the DC-6s, and eventually for the Conquest 340s new jet airliner.

Although not new to the airline industry, the system was worked out and tailored to itself's needs by Wm. Marwick, director of maintenance and engineering, with the help of his assistant, Gene Norris. The plan was coordinated by E. M. Moore, assistant to the president.

Now at hand—G. C. Younes, BNT's Chief Maintenance Engineer, told Aviation Week that all jets now on order will have the Bonita Data Mng. (Aviation Week Oct. 9, 1970, p. 44) aboard. The airline was very satisfied with the unit as a result of a one-year service test.

The 340s also will be used to receive engine analysis, the airline not having decided which unit to buy. Younes and the thinking led to the Skydrol.

Four of the company's older DC-6s have had their cabin supercharge drive systems converted to Skydrol. Indication is that moving parts life will be increased because of the fluid's improved lubricity. The three new DC-6s will be delivered with Skydrol in the cabin supercharge drive systems. The Conquest 340s cabin superchargers also will be Skydrol-equipped.

Bonair is bringing the leading weight of its existing fleet of DC-6s up to 75,000 lb. from 75,000. The new stage will have a landing weight of 80,000 lb.

A tour of Bonair's engine overhaul shop revealed these developments.

The flying covers over the dy-

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Does a flame-out
mean bail-out?



(inertial, relay, alternator, etc.) being switched on modern military aircraft. All have to be checked.

Increasingly sensitive engine receiving equipment requires more efficient filtering over wide ranges of frequencies. Existing frequency limit is, Mil-Std says, up to 100 Mc/sec.

More stringent demands for smaller size, higher temperature and lighter weight units are complicating the filter designer's handbook.

Mil-Std told Aviation Week that his firm could accomplish a 90% percent filter size reduction if called in during design stage of the unit to be filtered. The state of the art has advanced far beyond the early days of filtering when engineers "drew engineers around anything until it looked like Christmas tree ornamentation."

In the time, modern filter plant, Flushing, N. Y., usually is actively processing a filtering to 1,000 mc and beyond. At the same time, the firm of its a consulting service to manufacturers of equipment requiring filtering. Filter will work with the engineers at these firms from the initial design stage to show them the most modern and advanced methods of mechanical banding, shielding and filtering to reduce radio interference to acceptable minimums. Then, if necessary, custom made filters will be provided for that particular piece of electrical equipment.

Filter has, in its secret room lab, all of the special testing equipment necessary to test a 1,000 mc, as needed in the latest specs such as MIL-STD-16111.

PAA Increases Overhaul Force

For American World Airlines has doubled the force of mechanics at its base, says, Tex., overhaul shops to handle a two-fold project.

The action is under contract to the USAF to overhaul 1,100 Pratt & Whitney R-1190 engines for C-47s. PAA has also moved in the overhaul of its new C-46 cargo carriers from Miami where maintenance was being done by a private firm.

Amazing Aircraft Finish

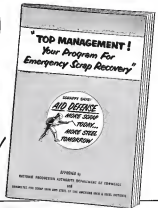
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iron and steel
scrap problem



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Unless the steel mills get more scrap... factories may have to be shut down.

Shut down—at a time when our armed forces need more and more equipment... when critical demands for steel are greater than ever... when our economy is fighting desperately against inflation!

You Can Help. Yes... regardless of the business you're in... you're at the scrap business, too.

If you're in the steel-making busi-

ness, you have extra scrap metal to be added to your production scrap.

If you're in any other business, you surely have the metal that will do you—and America's—more good being fed into factories than sitting on your premises.

Write for suggestions. The booklet shows how to set up a Scrap Salvage Program with least amount of effort and maximum interference with your regular operation. It tells where to look for scrap, what to do with it when you get it. You are urged to read for the booklet.

now Use the coupon.

FACTS ABOUT SCRAP SALVAGE

Steel production	1950—47,000,000 net tons
Estimated capacity	1952—50,000,000 net tons
Estimated scrap	1950—24,000,000 gross tons
Estimated purchased scrap requirement	1952—24,000,000 gross tons

Where will the extra scrap come from? Mostly from your dormant metal—obsolete machines and structures, tools, pipes, fixtures, gears, wheels, chains, truck



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NEW AVIATION PRODUCTS



New Lightplane Plug

A new sparkplug, the Safe 8-57, claimed to be a boon to the lightplane owner since it maintains radio interference caused by ignition systems and never has expense of a disabled system, has been announced by U. S. Quartz Tile Co.

The plug is said to be the result of five years' development and, according to the company, already has received GAA approval. The unit is reported to last as actively with range between precession and loading because of high thermal conductivity of the insulating material used.

According to the firm, the plug has successfully completed a rigid 150-hr. ground endurance test, including 50 hr. at 600 degrees with temperatures in excess of three allowed in flight. 50 hr. at various cruising powers and a final 10 hr. at full throttle. The plug passed its test without damage or settling of the cap, the firm reports. U. S. Quartz Tile Co., 217 4th St., N.E., Canton, Ohio.



Aircraft Actuators

A new series of lightweight, high-torque electrical actuators for aircraft has been announced by Pacific Aerospace Corp.

Part of this new line, now in pro-

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duction, is an actuator weighing less than 14 lb., having a maximum torque of 110 in. lb. at 2 rpm. The unit includes a radio noise filter meeting Specification MIL-8184. Dynamic braking relays also are included in the same assembly.

Pacific Aerospace Corp., 2540 N. Hollywood Way, Burbank 7, Calif.

Plane, Field Tape

A self-bonding, electrical insulation tape which can be laid through a wide range of temperatures and is designed to meet stringent performance demands of the aviation industry, is being marketed by Bishop Mfg. Co.

The product, Bi-Seal, Type 4, is a hydrocarbon formulation that is non-adhesive, yet extremely tenacious upon removal. Instead of adhesive, Bi-Seal depends on its "memory." After being stretch-wrapped around a cable splice or component, the tape tends to contract to fit around itself, creating powerful internal pressure that "heals" it in effect, into a tight, solid mass which cannot unravel.

Bi-Seal makes a wrapped seal, following the contour of the most complex shaped component, says Bishop. It is equally resistant to moisture and provides a high dielectric shield over any type cable or wire installation.

The versatile tape is said to be capable of performing a wide range of insulation tasks associated with aircraft and ground installations, from protecting parts exposed to corrosive salt spray or the humid atmospheres of the tropics to serving as electrical insulation on cable splices exposed to wet and rapid temperature of the Arctic or high altitudes.

Bi-Seal is recommended by Bishop as a permanent barrier against moisture, electrical insulation in applications involving field lighting equipment. It could be applied, for example, for field use in the Arctic where an emergency cable splicing job might have to be performed outside at extremely low temperatures. The product can be used at temperatures from down to -65F, according to the firm.

Bishop Mfg. Co., 18 Canfield Rd., Cedar Grove, N. J.



Better AN 741 Clamps

Improved AN 741 standard aircraft hose clamps, types "A" and "B," exhibiting more uniform quality and designed to closer tolerances than parts of this type formerly produced, are re-



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Up a Tree?

Not enough hours in your day? Here's a handy slide-chart to make your job simpler and save valuable time! This FREE chart instantly identifies A-N fasteners to stainless steel nuts, screws, bolts, rivets, cotter pins, washers, gaskets, other data. Write for your FREE copy of Chart SIC TODAY!



Anti-Corrosive AN FASTENING SELECTOR

In listing below, find AN number and note kind of fastening. Then, in proper window, see AN number and steel data.

NUTS				SCREWS			
NUMBER	SIZE	TYPE	STEEL DATA	NUMBER	SIZE	TYPE	STEEL DATA
AN10	1/4"	UNF	A193	AN10	1/4"	UNF	A193
AN11	3/8"	UNF	A193	AN11	3/8"	UNF	A193
AN12	1/2"	UNF	A193	AN12	1/2"	UNF	A193
AN13	5/8"	UNF	A193	AN13	5/8"	UNF	A193
AN14	3/4"	UNF	A193	AN14	3/4"	UNF	A193
AN15	1"	UNF	A193	AN15	1"	UNF	A193
AN16	1 1/4"	UNF	A193	AN16	1 1/4"	UNF	A193
AN17	1 1/2"	UNF	A193	AN17	1 1/2"	UNF	A193
AN18	1 3/4"	UNF	A193	AN18	1 3/4"	UNF	A193
AN19	2"	UNF	A193	AN19	2"	UNF	A193
AN20	2 1/4"	UNF	A193	AN20	2 1/4"	UNF	A193
AN21	2 1/2"	UNF	A193	AN21	2 1/2"	UNF	A193
AN22	2 3/4"	UNF	A193	AN22	2 3/4"	UNF	A193
AN23	3"	UNF	A193	AN23	3"	UNF	A193
AN24	3 1/4"	UNF	A193	AN24	3 1/4"	UNF	A193
AN25	3 1/2"	UNF	A193	AN25	3 1/2"	UNF	A193
AN26	3 3/4"	UNF	A193	AN26	3 3/4"	UNF	A193
AN27	4"	UNF	A193	AN27	4"	UNF	A193
AN28	4 1/4"	UNF	A193	AN28	4 1/4"	UNF	A193
AN29	4 1/2"	UNF	A193	AN29	4 1/2"	UNF	A193
AN30	4 3/4"	UNF	A193	AN30	4 3/4"	UNF	A193
AN31	5"	UNF	A193	AN31	5"	UNF	A193
AN32	5 1/4"	UNF	A193	AN32	5 1/4"	UNF	A193
AN33	5 1/2"	UNF	A193	AN33	5 1/2"	UNF	A193
AN34	5 3/4"	UNF	A193	AN34	5 3/4"	UNF	A193
AN35	6"	UNF	A193	AN35	6"	UNF	A193
AN36	6 1/4"	UNF	A193	AN36	6 1/4"	UNF	A193
AN37	6 1/2"	UNF	A193	AN37	6 1/2"	UNF	A193
AN38	6 3/4"	UNF	A193	AN38	6 3/4"	UNF	A193
AN39	7"	UNF	A193	AN39	7"	UNF	A193
AN40	7 1/4"	UNF	A193	AN40	7 1/4"	UNF	A193
AN41	7 1/2"	UNF	A193	AN41	7 1/2"	UNF	A193
AN42	7 3/4"	UNF	A193	AN42	7 3/4"	UNF	A193
AN43	8"	UNF	A193	AN43	8"	UNF	A193
AN44	8 1/4"	UNF	A193	AN44	8 1/4"	UNF	A193
AN45	8 1/2"	UNF	A193	AN45	8 1/2"	UNF	A193
AN46	8 3/4"	UNF	A193	AN46	8 3/4"	UNF	A193
AN47	9"	UNF	A193	AN47	9"	UNF	A193
AN48	9 1/4"	UNF	A193	AN48	9 1/4"	UNF	A193
AN49	9 1/2"	UNF	A193	AN49	9 1/2"	UNF	A193
AN50	9 3/4"	UNF	A193	AN50	9 3/4"	UNF	A193
AN51	10"	UNF	A193	AN51	10"	UNF	A193
AN52	10 1/4"	UNF	A193	AN52	10 1/4"	UNF	A193
AN53	10 1/2"	UNF	A193	AN53	10 1/2"	UNF	A193
AN54	10 3/4"	UNF	A193	AN54	10 3/4"	UNF	A193
AN55	11"	UNF	A193	AN55	11"	UNF	A193
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AN57	11 1/2"	UNF	A193	AN57	11 1/2"	UNF	A193
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AN59	12"	UNF	A193	AN59	12"	UNF	A193
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AN61	12 1/2"	UNF	A193	AN61	12 1/2"	UNF	A193
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AN67	14"	UNF	A193	AN67	14"	UNF	A193
AN68	14 1/4"	UNF	A193	AN68	14 1/4"	UNF	A193
AN69	14 1/2"	UNF	A193	AN69	14 1/2"	UNF	A193
AN70	14 3/4"	UNF	A193	AN70	14 3/4"	UNF	A193
AN71	15"	UNF	A193	AN71	15"	UNF	A193
AN72	15 1/4"	UNF	A193	AN72	15 1/4"	UNF	A193
AN73	15 1/2"	UNF	A193	AN73	15 1/2"	UNF	A193
AN74	15 3/4"	UNF	A193	AN74	15 3/4"	UNF	A193
AN75	16"	UNF	A193	AN75	16"	UNF	A193
AN76	16 1/4"	UNF	A193	AN76	16 1/4"	UNF	A193
AN77	16 1/2"	UNF	A193	AN77	16 1/2"	UNF	A193
AN78	16 3/4"	UNF	A193	AN78	16 3/4"	UNF	A193
AN79	17"	UNF	A193	AN79	17"	UNF	A193
AN80	17 1/4"	UNF	A193	AN80	17 1/4"	UNF	A193
AN81	17 1/2"	UNF	A193	AN81	17 1/2"	UNF	A193
AN82	17 3/4"	UNF	A193	AN82	17 3/4"	UNF	A193
AN83	18"	UNF	A193	AN83	18"	UNF	A193
AN84	18 1/4"	UNF	A193	AN84	18 1/4"	UNF	A193
AN85	18 1/2"	UNF	A193	AN85	18 1/2"	UNF	A193
AN86	18 3/4"	UNF	A193	AN86	18 3/4"	UNF	A193
AN87	19"	UNF	A193	AN87	19"	UNF	A193
AN88	19 1/4"	UNF	A193	AN88	19 1/4"	UNF	A193
AN89	19 1/2"	UNF	A193	AN89	19 1/2"	UNF	A193
AN90	19 3/4"	UNF	A193	AN90	19 3/4"	UNF	A193
AN91	20"	UNF	A193	AN91	20"	UNF	A193
AN92	20 1/4"	UNF	A193	AN92	20 1/4"	UNF	A193
AN93	20 1/2"	UNF	A193	AN93	20 1/2"	UNF	A193
AN94	20 3/4"	UNF	A193	AN94	20 3/4"	UNF	A193
AN95	21"	UNF	A193	AN95	21"	UNF	A193
AN96	21 1/4"	UNF	A193	AN96	21 1/4"	UNF	A193
AN97	21 1/2"	UNF	A193	AN97	21 1/2"	UNF	A193
AN98	21 3/4"	UNF	A193	AN98	21 3/4"	UNF	A193
AN99	22"	UNF	A193	AN99	22"	UNF	A193
AN100	22 1/4"	UNF	A193	AN100	22 1/4"	UNF	A193

Anti-Corrosive

Metal Products Co., Inc.

Manufacturers of STAINLESS STEEL FASTENINGS

CASTLETON ON HUDSON, NEW YORK

parted available from Production Products Co.

The new clamps are designed to overcome difficulties previously encountered with parts of this type. According to the firm, quality of AN 741 clamps on the market during World War II was so inconsistent that many aircraft companies had to produce their own. The improved clamps are fabricated to exact clear tolerances that insured, even the company.

They are available in steel with zinc or cadmium plate, in heat-treated aluminum or work-hardened aluminum with anodized finish. Sizes range from 1 to 24 in. diameter, .001 in. thick in steel and .001 in. thick in aluminum alloy. The company reports it also is producing the WP24 clamp, known as Center Weld or Consolidated 5018001. Production Products Co., Standard Products, Inc., 694 E. Gilbert, Wichita 11, Kan.

ALSO ON THE MARKET

A metal clamps, recently developed to perform these jobs in one operation is now on the market (Date Co. No. 11 performs this work). (1) removes oil, (2) cleanses rust, (3) conditions metal for good paint adhesion, according to the manufacturer, DeSoto Products, Inc., 111 Thomsen Street, New York 6.

"Card-A-P" reference made based on constant booklet cover wide range of information in tables and formulas constantly needed by engineers and draftsmen. Information does not can be found quickly through simple color coding system, says Walter General Design Co., 1708 Commercial Trust Bldg., Philadelphia 1.

Patented blade hub grinder said to provide exceptional efficiency when grinding external surfaces of aircraft propeller blade hubs and ball screws, is on the market. Truck is a wood-burning fixture on an anti-vibration bearing work stand that holds the blade in a vertical position so grinding may be performed in that position. This avoids cross brought about by deflection of the blade when ground horizontally, according to the manufacturer, Norton Co., Worcester, Mass.

New air hammer striking up to 6,000 blows per min. is available. Light in weight (about 2 lb.), unit features a patent 3-point ball-bearing chuck to lock tool in working position allowing hand of tool operator. Tool operates at 120 psi. and controls can be used to regulate striking speed or power. Made by Pneumatic Tool Division, Salsburg Corp., 1561 E. Flannery Ave., Los Angeles 1.

NOW... A COMPLETE LINE OF CYLINDRICAL ACCUMULATORS TO SPECIFICATION MIL-A-5498

Cylindrical accumulators designed to the latest proposed AN Envelope and which meet requirements of Specification MIL-A-5498, including water-tightness and ability to withstand gunfire, are now available from Bendix-Pacific, largest producer of aircraft accumulators.

At the suggestion of both the Air Force and the Bureau of Aeronautics, Bendix-Pacific has developed these accumulators, weighing approximately the same as the Bendix-Pacific spherical accumulators. With several models of cylindrical accumulators already in volume production Bendix-Pacific is now gearing for mass production of all sizes.

Listed below are the numbers which Bendix-Pacific has assigned to accumulators matching the present envelope arrived at the April meeting of the SAE A-6 Hydraulic Committee. Other light weight models are also available.

Assembly No.	Alt. Capacity
A11000-0	30 cu. in.
A11010-1	30 cu. in. (steel die)
A11020-0	30 cu. in. (steel die)
A11030-0	100 cu. in.
A11040-0	200 cu. in. (steel die)
A11050-0	200 cu. in. (large die)
A11060-0	400 cu. in.



Wear by gunfire and gunfire.

The ability of Bendix-Pacific cylindrical accumulators to withstand gunfire is evidenced by this new metal plate. Fully subject necessary construction was not.

Pacific Division

Bendix Aircraft Corporation
4001 W. BROADWAY, LOS ANGELES 1, CALIF.

AIR TRANSPORT

TAL Builds Hedge Against Nonsked Ban

• CAB gets harder and harder to please, so Transocean looks for new revenue on the ground or in the air.

• But flying is still the business the company loves the best and feels it knows the best.

San Francisco—is the centerpiece of Transocean, a \$700,000,000 company now in a major construction, on O'Brien a pleasure jet sold a new Dodge, there's a new executive gift shop in Hockley Center.

Doesn't sound much like an airline's operations, but when the profits from these are added they'll show up in the financial statement of Transocean Air Lines.

These three activities are just samples of Transocean's diversifications. There are many more two flying divisions and subsidiaries of the parent firm.

• **Largest Firm—TAL** has been the core of the flying business. In fact, it's the most time-consuming, with 111 airplanes in the air today—largest number ever operated by the airline. And, if the time C-56s now in the Korean airlift were moved tomorrow, they'd be enough to provide 600,000 seats in the world within a week.

The fact that Transocean has spread a little of the leadership of a former United Air Lines pilot—dynamic TAL president Gene Nelson. Not that Nelson wanted to waste to get out of the main business he loves and that he can't be sure he knows best. But clearly after five years of the company in 1946, he was dark clouds. The possibility that continued financing on TAL's world-wide network could be cut by the CAB might put the company out of business was very real, and a lack of a future where the company could work, DPs, etc., was enough to have flown from out of the picture to another was discouraging. Nelson wanted to hold his boys together even if it meant getting into new fields of business.

• **Anything Available**—While diversification has been brewing, TAL has continued to fly by itself and anything else that came in the world. Nelson's original drive, prompted by the same original vision in 1945 when flying a biplane on a Pacific island while they were flying for ATC, has continued to come true. Millions of tons of material have been flown about the world. Besides the

Korean airlift, TAL plans are flying in Alaska, Cuba, the Navy, and the Navy, among the top military airlines, an extremely uncoordinated flight between Oakland and Honolulu and transoceanic routes are routing money, people from the Navy and Air Force are going down to Mexico, supplies from America in East Africa are going on flights to Africa for the American Airline Co. TAL is also getting its share of the day-to-day charter flights.

Some of TAL's early business was on quite inland flights. It's decided to maintain a high standard of flight crew proficiency, for instance, led to the establishment of a flying school. Lack of adequate automobile servicing facilities at busy Oakland airport has resulted in the establishment by TAL of a super gas station.

There are of Wake Island as a base led to the general operation of a small city—the light and water systems in the pool hall. A point shop in Oakland set up to print money used by the company also serves the general public. There's a barber shop. "Any way to make an honest dollar," says Nelson.

• **Other Items**—Transocean Engineering Co., the construction subsidiary that has led and built several bridges in the Golden Gate highway network and now on the Fresno road, is the result of a deal with the Chinese government plus some private engineering know-how from TAL's early days of the Alaska landing trip experiments.

Seattle construction equipment left on Wake was given to the Chinese. Nelson bartered for it and brought the work to the U.S. by long. After accumulating it, he sent it to Japan.

In setting up the Tishman division not long ago, TAL took on the international distribution of the Jackson Chemical Supply Co., Los Angeles. The line consists mostly of industrial cleaning compounds which, Nelson found, was in TAL's own maintenance shop. Monthly sales have increased each month since Tishman's inception last April.



NEILSON: "Anything for an honest dollar."

When the Oakland Airport refused to handle his out last year, Nelson decided he could do a better job looking the public than had been done. Today an ultra-modern entry has a regional reputation. It's now a hub for TAL's flights to the Pacific and to the Atlantic.

TAL's subsidiary, a subsidiary on O'Brien, grew from the fact that a TAL's maintenance didn't have enough to do between flights. Military and other personnel on the island were so a company named as a Dodge and De Soto dealership was set up.

Of Transocean's present 3,600 employees about 1,800 work for Transocean, moving Aircraft Engineering & Maintenance. This subsidiary was set up in 1946. It was set up to handle the maintenance of the Air Force's C-74s, most of which came out of the Korean airlift. It did a similar job on planes from the Berlin airlift.

CAB shows that the current TAL's activity to get into full using is the international trading company, an example of which is the Rockefeller Center gift shop. Dealing in imported merchandise, it will not only sell retail, but will also wholesale export. Similar stores will be established by Transocean in other major cities.

Until part of the operation is the setting up by Nelson in offices in many foreign countries. Not only will these offices help products in the countries in which they are located, but they will also make arrangements for purchase of anything in the U.S. for governments or private firms. An example of

such activity is \$200,000 worth of portable housing now being delivered abroad. These offices will also act as full-fledged travel agencies. Naturally they'll be on the lookout for any aviation business that might come along.

Typical of Nelson's solid planning is his hiring for his trade representative in 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 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UAL Management Shuffle Continues

United Air Lines has announced another management change to promote smoother operations and better service. Irving C. (Gus) Sussmanberger moves up to become general manager of flight operations, reporting to new Flight Operations Vice President D. R. Petty (Aviation Week Oct. 8, p. 59). Sussmanberger is a 15,000-hour pilot. He is known as a strong advocate of rigid pilot training and living by the book. Since 1947 he has been assistant flight manager at Chicago.

Public manager of Walter Addicks, former general manager of flight operations, is not yet announced.

Other United Air Lines management changes have so far taken the shape of reassignment of responsibility to one vice president each, for flight operations, engineering and maintenance, and ground service. Petty was elevated to take the flight operations burden off E. A. Haffley, whose title changed from vice president-operations to vice president-engineering and maintenance. Flight operations duties are in Denver. The engineering and maintenance center is at San Francisco.

Petty and Sussmanberger now take over flight operations. So far, their staff includes flight training system, C. A. Farabee; writers, Henry Harnett; dispatch, Bert Latt; communications, J. K. Cunningham.

About the same time that United decided to split its flight operations responsibility from engineering, the United pilot's Master Executive Council of Air Line Pilots Assn. did the same with its pilot association organization. It split its Engineering and

Air Safety Committee (and special subcommittee) with one MEAC Engineering Committee and one MEAC Air Safety Committee. It did the same with local subcommittees.

Petty must deal with committees were formerly bypassed by United management. They now ask that management consult them on matters of pilot interest.

Colonial, AAA Mail Pay Cuts Ordered

The Civil Aeronautics Board has slashed mail pay of Colonial Airlines, slightly reduced that of All American Airways, and slightly increased that of Wiggins Airways.

Colonial's annual mail pay starting Apr. 1 was set at \$872,000—about \$400,000 under last year's.

CAB says its outlook on mail pay to Colonial results from three main factors:

- Improved national revenue outlook and present performance.
- Reduced depreciation charges on equipment.
- Lower costs anticipated under "last air, seasonal and efficient management."

CAB has also ordered Colonial to refile to the government some \$216,000 back mail pay received for operations Apr. 15, 1946, to Apr. 1 of this year. Total pay fixed for Colonial for that period now is \$5,120,184—compared with \$5,721,000 asked by Colonial. CAB says it is paying \$2.6 mil less than Colonial and it decreed because the Board finds Colonial's costs were inflated by "exaggerated management." Colonial is under new management now.

From the Board "If the carrier had

conducted its operations during the five-year period in its lowest, reasonable and efficient manner, as required by the Civil Aeronautics Act, it and pay arrangements should have been in the amount allowed by the Board, rather than first claimed by the carrier."

• All-American: All-American Airways' mail rate starting next year is reduced to one cent contracted \$1.5 million annually, compared with a present rate for 1951 of about \$1,650,000.

• Wiggins Airways—CAB estimates Wiggins will need \$2,573,715 in mail pay for the same month from July 1 of this year to Mar. 31 of next year and about \$274,130 monthly thereafter. Wiggins is also getting \$70,000 in back mail pay interest.

Egypt Releases Eight C-47s

(McGraw-Hill World News)

Cairo—Eight Douglas C-47 Dakotas have been sold to a Canadian civil aviation firm by Egyptian authorities following a ruling by the government that the planes were no longer considered essential military material. The Ministry of Defense has relinquished of goods which may be vital to national defense.

Two of the planes have left for Canada and the remainder are expected to follow shortly. They were originally obtained in war surplus from the British and reacquired by Egypt.

30-Day Stay Given To Heacock Nonsked

Civil Aeronautics Board has given a 30-day stay of execution on its order revoking operating authority of nonsked Air Transport Associates, Inc.—the Seattle Alaska carrier of Anton Heacock. CAB will study his 250-page petition for reconsideration of the CAB death order to be entered last month for flying "too frequently and regularly" in 1949 and 1950.

Included in the exhibits filed as his reason for reconsideration, Heacock presented letters of protest from over 800 residents of Anchorage and Fairbanks, Alaska. Point of need is that this nonsked bumps 75% of the air force possible loads into Northern Alaska, and its demise would adversely affect welfare and business of the territory.

British Plane Test

British Army will test Auster BA, lightplane "Flying Jockey" in maneuvers on Salisbury Plain. Craft can be used as face-out observation plane, reconnaissance, supply drop plane or fighter.

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With the delivery of its second Douglas DC-66 this month, Slick Airways has stepped up its coast-to-coast air freight service to a daily schedule. The new planes, first of six on order, are expected this fall to

achieve designed to carry maximum air freight. Each has a capacity payload of 30,000 lb. Permitted routes allow operation at altitudes of 30,000 feet or speeds in excess of 750 mph.

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Those 'Fantastic' Weapons

Another epidemic of speculation about wonder weapons is sweeping the country since President Truman assured hope that perhaps science and industry have devised a panacea for ending war quickly.

He said it this way, in a speech in San Francisco Sept. 4 before a Democratic Party convener: "It is fantastic what can happen with the use of the new weapons that are now under construction in this country, not only the one which we all fear the most, but there are some weapons which are fantastic in this question. I hope we will never have to use them."

These are fantastic weapons on paper, including such devices as artificial satellites revolving around the earth. That, at some undetermined future date, might possibly serve as platforms for weapons that, by remote control, could spray disaster on parts of the earth. This apparently was in the mind of one Washington spokesman who referred nostalgically to "conquering the atomosphere." But such a satellite is far away. It is not as Mr. Truman said—"under construction."

"What about rockets?" This field often the most popular one of speculation that followed on the heels of the President's speech.

Undoubtedly, progress has been made and it still being made, but there is nothing new in missile production that justifies the description, "fantastic."

It sounds like history repeating itself. There was a similar wave of missile speculation in 1950. An editorial here July 31 of that year sounded familiar.

"It is time for another warning on missiles. The public is being dangerously misled by the continuing drizzle of government press releases on various and isolated missile designs, velocity figures and delivery methods. The general public impression from this publicity, however, seems to be that production warfare is around the corner." At that time we urged someone to bring order out of the chaos.

Shortly afterward, the apparent K. T. Keller was appointed a sort of adviser or coordinator for all of the government agencies' various, unorganized guided missile programs. Keller has done a signal job and will soon leave his post, considering his assignment completed. When he was named, the government had already spent \$150 million on missiles, yet not one production model of any type was then on a factory line.

In July, 1958, we pointed out that we still did not have any intercontinental missile weapons. This is still true. We did not have any long-range rockets—anything even in the 1,500-mile class. This is still true.

In 1959 we did not have in being any service-tested or service-adopted missiles of any type or range. Here we apparently have made progress of some kind.

But we still do not have a single missile defense unit set up anywhere in this country ready to hang away at invaders. Whether it is construction of the Matador type—which is surely a jet-propelled airplane with swept-back wings and no pilot—certainly does not stand up to Mr. Truman's label of "fantastic."

All of this is fact. It is not criticism of those who are working diligently in this vital field. Actually, irresponsible public talk suggesting the work of these men in the missile endeavor is exceedingly unfair to the hard working and loyal group. But they know that all there are no fantastic weapons "in production." The rest of the citizens should understand that, too.

Doing the Impossible, Quicker

It is no new idea that this fabulous aviation business has a reputation for doing the impossible. Aircraft manufacturers get most of the acclaim. It deserves plenty. But the airlines are doing a lot of the "impossible," too—things that would have been done sooner, however, if it hadn't been for an earlier generation of obstructivists.

It was only a few years ago that CAB heard it might be said that a fourth intercontinental airline would never pass, that equipment interchange on the airline was and always would be impractical and impossible, that still another restriction could not be made workable, that airlines were ordered by Providence to never only the champagne trade and that air travel must necessarily always proceed with the cost of everything else, that the industry must never again or support valuable expansion, that the helicopter would always be inherently complicated and of little practical use, that air travel was trivial and always would be.

There are just as many old doggy ideas being propagated airlines about today as there were in 1955 or 1941.

Airlines people who have been working steadily about perhaps hundreds of passengers "overload" from talking services to air coach might really be plotting like sharpshooters to use thousands or millions more from buses, trains and motor cars in any class of air transport and how to get millions who don't now travel at all into the mood of flying somewhere because it's easy, cheap and safe.

Airlines people are still dwelling second, five years after the end of a major war, trying to find the perfect and ultimate answer to all weather condition and navigation problems, when they ought to be getting some kind of wide scope on every transport phase at the earliest possible moment. Government people who are usually worrying about our international relations, tending to "offend" some of the other members of our world brotherhood ought instead to be clearing the way for those who have the desire to avert low rate, frequent international air coach services so we can really do a job of improving our world brotherhood with stimulated trade exchange.

CAB people who have been so absorbed in finding of politicians and pressure from and applicants for new helicopter and services ought to remove their blindness and let the low the aviation business would really look at it and not nagged clearly for anyone with vision.

Too many of the airlines who control some of the destinies of aviation don't have the vision or the will to look ahead at aviation as it could appear, unimpeded, if they would but do their job. No wonder the responsible takes a little longer! —Robert H. Wood

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Actuator Screw Jack Data

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Allison Turbo-Prop Engines Power 3 New Cargo Planes—

★ **The Lockheed XC-130**

★ **The Douglas R6D**

★ **The Lockheed R70**

While testing continues with the first U.S. Turbine Transport—the Allison Turbo-Liner, built by Convair—military contracts have been awarded for the installation of Allison Turbo-Prop engines in three additional types of transport aircraft.

★ The Lockheed XC-130—a U.S.A.F. four-engine medium cargo plane—is the first military transport ever designed originally around Turbo-Prop power. It won U.S.A.F. design competition over five other makes and the selection of Allison engines

represents another first for Allison in the development of turbine transports in this country.

★ The new Navy-sponsored R6D is a modified configuration of the world-famous Douglas DC6A Liftmaster.

★ The Navy R70 is the new turbine version of the Lockheed Super Constellation.

Allison Turbo-Prop engines were selected for all three aircraft because they develop more power with less than half the weight of present engines in this power class.



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